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DIFFERENTIAL EDUCATION FOR THE GIFTED: THEORETICAL PRINCIPLES

by

Virgil S. Ward

The history of efforts in American education to conceptualize from a mountainous knowledge about persons and how they differ from each other in potential has been marked by extreme contrasts. There have been both remarkably fertile periods of concern and action, and periods of active denial and resentment. Denial has at times given way to acceptance on the expedient grounds of national interest rather than on grounds of the democratic commitment to persons.

Throughout this history, no sense of mission has emerged and become established to encapsulate the lofty insights and passions of Leta Hollingworth of the early 1920's. Peaks in the quantity of research and publication have added little to the science developed by Lewis Terman, again in the 1920's. Despite the substantial support of private foundations and a growing federal interest in national projects and local school programs with the abler student in focus, we concentrate on acceleration in various guises, and grouping and enrichment—concepts and practices which once again take us back to the productive early history of this specific effort, and remind us all over again of pioneer programs in Cleveland and Pittsburgh and New York City. Further, those concerned with giftedness have sat essentially passive and undisturbed in the groundswell of great ideational forces like existential philosophy, phenomenological psychology and the developmental theories of Piaget and Bruner.

The present era falls heir to this scattered and inconclusive heritage, and bears the earmarks of continuation of lost opportunity. The gifted child today excites concern in thousands of individual parents and teachers, but few effective coalitions of these interests has emerged. Separate and rival professional organizations have developed, but only sporadic gestures have been made toward unification among national and state groups for the common mission of taking an effective role in shaping the policies and practices of the American school. Differential education for bright and talented youth today is existent virtually in name only, if programs and practices embody any conceptual rigor at all. It is undersold in conception by major projects, absorbed by exciting advances in general education, overshadowed by popular concerns with creativity and cultural disadvantage, and dwarfed in material support by other types of exceptionality among persons. As Dickens wrote in A Tale of Two Cities, "...it is the worst of times; it is the age of foolishness; it is the epoch of incredulity; it is the season of Darkness..."

The Function of Science and Theory in Educational Practice

With this kind of hair shirt on his back, the prophet of gloom traditionally has his ready prescription for a new and better day. And in a sense, hopefully a sense appropriately disciplined by reason and reality, the present series of papers do represent what the respective authors feel is one essential and promising avenue toward improvement of the dark course and unfulfilled history just cited. And in that the effort to form out of research,

observation and reflective thought some integrated, rational or theoretical scheme that involves a certain specificity of conception, coherence in purpose, and exactness in practice comprises a rare if not unique endeavor in this field, it seems reasonable that some good at least may ensue. This, then (as Dr. J. S. Renzulli indicates is the objective of the effort in which we on this program are engaged: to bring together in an integrated pattern what science and examined experience offer to the educational practitioner, and to show how a program of differential education can be related to this embodiment of science in theory.

But "theory" has for too long been a misunderstood concept, a threat to the practitioner to whom it has greater relevance and promise. Empirical science is generally conceded to be the ultimate taskmaster in shaping the character of action that leads toward worthy goals and aspirations. Both the quantity and increasing sophistication of educational research are distinguishing characteristics of this period of American education. But research is necessarily confined to specific bits and pieces of a whole problem. As such it is inert and sterile until it is picked up and fitted into a purposeful scheme directed toward a recognizable problem or objective in human affairs. It is this picking up and putting together of tested observations and research findings which is the function of the educational theorist. It is those theories which comprise a consistent and harmonious pattern among isolated bits of insight and information which provide a basis for further empirical research. It can be seen, thus, that scientific research <u>begins</u> in theory; and it properly <u>ends</u> in theory as well, in that well designed inquiries contribute toward filling in the pattern which, while whole enough at some point in time to support inquiry, remains always in need of further refinement and modification.

Theory is necessary to practice when practice is effectively geared to the achievement of specific purposes. Theory in its relevance to practice <u>is</u> something, and it <u>does</u> something. It is by nature an identification of salient elements and processes within a given realm of interest, and it is an organization of these elements into a functional pattern which embodies, manifests, or explains the task or phenomenon as a whole. The function of theory is to make possible a number of quite significant and desirable effects in the arena of practical action. The ideational blueprint, like that on the architect's drawing board, disciplines what is done in actual practice; it specifies the nature and purpose of various parts by revealing their place within the organized whole, and this identification encourages exactitude in action and serves further to encourage balance and comprehensiveness of function, since neglected or over attended parts of the whole are conspicuous when the whole is in clear perspective. And finally for the present, this clear and manifest relationship between part and whole provides a basis for systematic prediction of the effects of any segment of the phenomenon in focus, for pinpointing difficulties and for evaluating given elements or processes essential to the task in its ideal dimensions.

<u>The Proposed Theory of Differential Education for the Gifted: Toward Systematic Program Development and Evaluation</u>

This program itself, with all its concern about theory and system, is practical in nature; it is necessary to proceed to the specific practical involvements in the development of educational experience appropriately directed to the behavioral potentialities of the able learner and talented performer. So these are the questions at this point: "What is this particular theory?" "What does this particular theory do?" These questions will be answered in close conformity to the indications above concerning the respective

relationships and mutual contributions of theory to science, of science to theory, and of theory to practice in human affairs in general.

First, the proposed theory of differential education for the gifted identifies salient features of the problem, these being primarily: (a) the characteristics or potentialities for experience and performance which reliably distinguish the positive deviant, and (b) the salient features of the particularized developmental experience (curricular design, supported by appropriate program organization and operation) which these distinguishing potentialities make possible and which evoke and shape them progressively toward optimal strength and approved uses. In the text of the monograph, each of these main dimensions in a two dimensional matrix are explained in the light of tested observations and research, and the relationships between adjacent or intersecting elements and processes are taken into account by way of depicting on the whole the process of human development through experience, with emphasis on superiority of potential.

A summary "Table of the Theoretical Rationale" will suffice as a reference. The ensuing papers will, whatever else their respective authors have chosen to do, refer in the respective contexts of curriculum and research and program evaluation to specific junctures in this matrix to illustrate the applications of the theory in segment after segment of a program of differential education. In view of those particular indications that are to follow, the present reference to the chart will be in the nature of an overview, a peripheral tour that prepares for but will not preempt what follows.

The title of Column 1 of the table is "Experiential and Behavioral Potentiality." In this portion of the system, a structure is provided within which all principal forms of giftedness can be accommodated and this in a manner leading into further involvements by way of educative process. In the three cells in this column (b and c being the same) three generic potentialities of the person are taken into account: (a) his possible, but not certain superiority in some degree in <u>dynamic or temperamental traits</u>; (b) and (c) his <u>general</u> intellectual superiority; and (d) his particular cognitive peaks or talents—experiential or behavioral. These elements in the theory in each instance, it is purported, respect and involve research evidence, this being perhaps most readily perceived in the generalization that specific talent is ordinarily buttressed by above average general intelligence. No attempt is made to specify in the theory how many or what kinds of specific aptitudes that are presently identifiable and amenable to school experience, but there is a locus for each and every talent so identified. The bottom cell in this column, as in the others across the table, is summary in nature, embodying in compacted phraseology all that is allowed for in the cells above.

Column 2 is virtually self explanatory, what we term "developmental objectives" being principally an indigenous transposition of what is indicated in the initial cell as <u>potential</u> into a phrasing suggesting what <u>purpose</u> in each instance resides in the educative <u>processes</u> geared to the particular trait pattern and leading to the <u>product</u> identified in column 5 . Cells 2 b and 2 c , both dependent upon general intellectual superiority, do require brief explanation, and may indeed be somewhat controversial. In the first of these, "conceptual development," the stage is set for the acquisition of information of any and all sorts; and in the second, "intellectual development," the intended meaning involves experience which by its nature tends to affect cognitive structure, or biological tissue, insofar as such basic effects are in fact possible.

Columns 3 and 4 depict, as Louise Ann Schifferli's paper indicates in

Table 1. Differential Education for the Gifted: A Table of the Theoretical Rationale (ISU, 1968)

(1) Experiential and Behavioral Potentiality	(2) Developmental Objectives	Curricular Design: Developmental Experience (3) Substance: Knowledge of, about Arts and Sciences; Values; Behavioral Skills	(4) Process: Learning and Instruction	(5) Goals, Outcomes: Actualized Experiential and Behavioral Potentiality
a) Ordinary emotional response potentiality plus possible extremes in temperament, sensitivity.	Personal Development	Value information; valuational and affective situational experience and activity.	Cognitive and situational experience and guidance involving motive and emotion.	Mature, healthy personality actualized self with constructive and gratifying involvement of productive or creative disposition.
b) Superior intellective potentiality, moderate to extreme.	Conceptual Development	All knowledge and derivative activity arranged in an epistemological taxonomy.	Lifetime learning and behavioral development; Mainly personal exploration according to interest or need; instruction and social interaction only where these significantly facilitate individual learning and performance.	Understanding and skill of every nature and in whatever degree required by the actualized self for satisfying experience.
c) (Superior intellective potentiality, moderate to extreme.)	Intellectual Development	Any knowledge or activity involving those complex mental processes subject to structural or functional modification through experience.	Functional exercise, supervision and evaluation involving available intellective potentiality.	Optimally developed potentiality for general intellective operations: reflective, critical, creative.
d) Extreme superiority in localized experiential and behavioral potentiality.	Aptitude Development	Relevant technical knowledge or activity in full subtlety and complexity; systematic knowledge of one or more particular fields.	Sustained, exacting experience, supervised and evaluated in light of most sophisticated developmental theory and technology.	Extraordinary understanding and skill, localized; actualized talent.
All significant, identifiable human potentialities sufficiently extreme to warrant special treatment.	Integrative development of all significant exceptional potentialities.	Every significant kind of knowledge and human activity utilized as required by and for the individual in life long personal growth and contributory social interaction.		Optimally developed, continually becoming person, free and responsible universalized human mind and character, educated for social and cultural interaction.

some detail, the nature of those developmental experiences intended to advance each particular potentiality and related objective. Column 5 depicts, in language so compact that without the text the meaning may be difficult to follow, the person developed as product out of the various lines of experience arranged throughout childhood and youth, and bearing specifically upon those experiential potentialities which he as an individual manifests.

The bottom row, as indicated a moment ago, summarizes in each respective column the aspect of education involved, and the last cell of all, bottom of column 5 , is the residual point upon which all the educative forces converge. Again in overly compacted phrase, one can sense an idealized embodiment of conventional educational goals, transformed toward the distinguishing superior potentialities of the gifted person.

With this explanation in hand of what the proposed theory is comprised of, what the theory does must be depicted more briefly. It will help at this point to think in terms of phases or problems in a school program, rather than of curricular experience. By and large, it is purported that this theoretical rationale allows us to locate every significant phase of an actual program of differential education in a local school or school system, to identify by this location the nature of the operation or provision and its proper function, and through identification to shape the program, relating theory to practice, in all the dimensions suggested earlier. The existence of the explicit general system tends to direct the shaping of these respective elements into exact accord which the place in theory indicates, and to set the stage for systematic prediction and evaluation of the efficacy of any part of process within the program.

Experienced observers of functioning programs know that these usually include, or should include, a statement of philosophy and objectives, a plan for student identification and placement, a considerable amount of attention to selection and training of the teacher, and some built in device for evaluation. Both the chapters in this section of papers, and the "key features" in the evaluation system to which Renzulli's original research was addressed include treatments of all aspects of program. And in the discussions, pervasive and systematic reference to the theory will in fact fulfill the promise of those virtues indicated earlier here to reside in a practical enterprise guided at every step by theoretical rationale.

Concluding Perspective: Time for Transformation

To round out this introductory overview, let us be reminded briefly of the opening note of pessimism, of a problem area of potentially great significance stretching across a history of a half century in which behavioral sciences have marched toward maturity and a half dozen ideologies and movements and social climates have emerged and passed, a problem poorly conceived in terms of contemporary thought and badly managed in terms of contemporary practice; in short a problem area without lodging or subsistence in the world of professional education.

There may well be a dozen avenues of renewed or innovative endeavors required to rectify this disconfiting course of history; but the present effort is submitted for what it may be worth in attempting to turn the course of events. If Dicken's eloquent language may be invoked once again, then perhaps we may suggest that it is a "time for transformation" in this concern--a transformation from isolated, particular, and ad hoc conceptions to systematic, rational conceptionalization as a basis for ordering and operating developmental

experience relevant to the task of evoking and directing human abilities.

PROGRAM EVALUATION IN THE PERSPECTIVE OF THEORY

by

Joseph S. Renzulli

The intention of the symposium on "Systematic Program Construction" was first to present a theory of differential education for the gifted and second, to show how selected phases of program development and evaluation are related to certain aspects of the theory.

The paper by Dr. Ward reflects his longstanding interest to fill the theoretical vacuum that exists in the area education of the gifted. His paper deals with the main dimensions of the educative process as it related to persons with extraordinary potential for learning and creativity. Dr. Ward has attempted to show the practical usefulness of theory in systematic program construction, and the consequences that usually result when programs lack the guidance that a theoretical rationale can provide.

In the paper by Miss Schifferli, selective, illustrative applications of how the theory leads to curriculum development for the gifted are presented. An attempt has been made to show how theory forces curricular comprehensiveness and calls attention to such factors as balance, focus, and distribution of the differentiated experience.

This paper discusses how a particular approach to evaluating special programs is related to the theory of differential education for the gifted (DEG).

Certain parts of the material presented in these papers are drawn from two pieces of work currently in progress. A monograph entitled, "Differential Education for the Gifted: Program Development and Evaluation," presents both the theory and practical guidelines for implementing various aspects of differential practice. The second piece of work is a revised edition of an instrument designed to evaluate programs for the gifted. The instrument is entitled "Diagnostic and Evaluative Scales for Differential Education for the Gifted" (DESDEG); and a brief description of its general nature will be reported in this paper.

Introduction

A test of the functional usefulness of any educational theory lies in the applicability of theory to the development of practical programs. Ward has proposed that the usefulness of his theoretical model is especially manifest in three significant phases of total programing for the gifted. Applications of these phases are discussed by Miss Schifferli. This paper will attempt to show the relationship between the overall theory and that segment of total programing which deals with program evaluation. More specifically, an effort will be made to point out common points of focus and demonstrations of relevance between the theory of DEG as described by Dr. Ward and the evaluative instrument, DESDEG. A description of these scales and the technique used in their development was presented at last year's CEC meeting in St. Louis and may be

found in the 1967 edition of Selected Convention Papers. Also reported in the same place are descriptions and data from the initial field testing of DESDEG which was carried out in the states of New York, California, North Carolina, and Illinois. (The generally positive results of this first attempt at applying the scales to actual programs has provided much of the impetus for continued development of the DESDEG, such development hopefully leading toward a revised edition that will be made available for general use sometime in the future.)

Summary of the Nature and Development of DESDEG

Although it would be neither practical nor desirable to repeat major portions of the work to which reference has been made, the first task of showing the relationship between program evaluation and the overall theory of differential education for the gifted (DEG) requires some familiarity with a major concept underlying our evaluative scheme that was described in detail in the earlier work. This concept, referred to as the concept of "key features" holds that certain program features and characteristics are manifestly more consequential than others and that the evaluative process is facilitated when it focuses on a minimal number of highly significant program characteristics which have been designed as key features. The key features around which our evaluative instrument is structured were determined through a systematic study that involved soliciting the opinions of a panel of expert judges consisting of persons who have made outstanding contributions to the field of the gifted.

Table 1

Diagnostic and Evaluative Scales for Differential Education for the Gifted (DESDEG) (VSW,JSR:1967)

Key Feature A: Philosophy and Objectives

- Program Requirement 1: Existence and Adequacy of a Document
- Program Requirement 2: Application of the Document

Key Feature B: Student Identification and Placement

- Program Requirement 3: Validity of Conception and Adequacy of Procedures
- Program Requirement 4: Appropriateness of Relationship Between Capacity and Curriculum

Key Feature C: The Curriculum

- Program Requirement 5: Relevance of Conception
- Program Requirement 6: Comprehensiveness
- Program Requirement 7: Articulation
- Program Requirement 8: Adequacy of Instructional Facilities

Key Feature D: The Teacher

- Program Requirement 9: Selection
- Program Requirement 10: Training

Key Feature E: Program Organization and Operation

Program Requirement 11: General Staff Orientation
Program Requirement 12: Administrative Responsibility and Leadership
Program Requirement 13: Functional Adequacy of the Organization
Program Requirement 14: Financial Allocation
Program Requirement 15: Provision for Evaluation

These features listed in order of importance as determined by the panel of judges are as follows: (a) purposeful selection and systematic training of teachers, (b) a recognizably differentiated curriculum, (c) systematic procedures for the identification and placement of students, (d) a statement of philosophy reflecting a commitment to differential education and statements of particularized objectives, (e) a clearly recognizable pattern of organization and operation. This last key feature combines such elements as administrative and supervisory responsibility, financial allocation, general staff orientation and program evaluation.

Fifteen "program requirements" related to various aspects of the five key features have been structured into rating scales. The program requirements may be thought of as generic expositions of certain theoretical principles or axioms of differential education that are found in the literature and which depict ideally conceived educational practices for gifted and talented students. Each program requirement serves as a focal idea around which a set of five "scale standards" has been developed. The scale standards represent practices or provisions that are derivatives of the respective program requirements and they have been arranged according to positioned degress of quality along a five interval hierarchy. The highest scale standard represents the best practice of mature and excellent programs within the area of each program requirement; and verbal tags, Ideal, Superior, Commendable, Neutral, and Negative have been affixed to each scale standard for descriptive and communicative purposes.

The scales are intended for use by evaluators who possess certain competencies and who are not a part of the program being evaluated. That is to say, they are not primarily intended for self assessment although they may be used in this regard and as guidelines in program development. The scales are considered to be diagnostic in that they call attention to specific areas where improvement seems warranted.

Relationship Between Certain Aspects of the Theory of DEG and DESDEG

With this much orientation to the nature and development of the evaluative instrument, let us now turn our attention to some specific relationships that exist between certain aspects of the theory of DEG and certain of the scales that are included in DESDEG. At this point it should be mentioned that differences in the origin and development of the theory on one hand, and the instrument on the other hand, make for a different kind of problem than that of a straightforward application of the theory to curriculum development and the research program. The problem here is one of detecting relationships between theory and evaluative practice after the fact of independent development of the two schemes; and thus, in the discussion that follows, it will be apparent that a perfect fit between the two schemes does not exist. For this reason, only the most obvious relationships between specific scales and general aspects of the theory (as indicated by the column headings) will be discussed.

Before going on to these relationships, one overall connection that justifies the application of the theory to the DESDEG evaluative scheme should be pointed out. Ward's theory of DEG is structured around certain general elements of the educative process as they relate to individuals with extraordinary potential for learning and creativity; and these general elements (potential, purpose, process) are harmonious with the necessary and sufficient key features that were identified by the panel of expert judges, and around which the evaluative instrument has been instructed. This fact comprises one form of test for both the validity of the theory and the validity of building an evaluative instrument around selected features of programs for the gifted.

Relationships Between Theory and Instrument

The first relationship between the theory and the instrument (Table 1 of Dr. Ward's paper) deals with the experiential and behavioral potential of gifted individuals. The theory is unquestionably clear in its focus upon extreme human potentialities, and it is equally clear that the kinds of curricular experiences called for to nurture such potential are of the type that only can be managed by individuals with identifiably superior capacities for performance. Enrolling youngsters without such potential in a special program can only result in a watered down curriculum or a highly frustrating experience for the improperly placed students.

Two sets of scales in the evaluative instrument are concerned with proper identification and placement. These scales attempt to evaluate a given school system's conception of giftedness and the relationship between this conception and the instruments and techniques used to select students for the special program. For example, if a school claims to be doing something special for youngsters with outstanding creative potential, then that school should be able to demonstrate valid and reliable means for identifying such potential. In other words, it seems highly unlikely that recognizably differential experiences designed to foster creativity will fall on very fertile soil if we don't know who our most potentially creative youngsters are.

The scales that are derivatives of the key feature dealing with identification and placement also consider the frequency with which screening and placement procedures are carried out, the number of criteria used in identification, the flexibility for transfer into and out of the program, and the appropriateness of the relationship between specific aptitudes and the curriculum. Thus it can be seen that both the theory and the evaluative instrument converge on this key feature isolated by the panel of judges, and that segment of the theory dealing with potential calls attention to student identification and placement when program evaluation is in progress.

Let us now turn our attention to the second column of the DEG table in Dr. Ward's paper which depicts the main developmental objectives of the theory of DEG with respect to each of the potentialities listed in column 1. The evaluative instrument attempts to take account of this aspect of the theory through two sets of scales under the Key Feature, Philosophy and Objectives. The ratings that local school programs earn in this area depend upon how well existing documents or statements of objectives specify purposes of differential education as related to the conceptions of giftedness which the local school recognizes. In an ideal situation based on relatively complete adherence to the theory, all areas of potentiality would be acknowledged, and such acknowledgement of the respective potentialities should be reflected through counterparts in the developmental objectives column. Thus, as the theory forces consideration of all significant potentialities, the scales attempt to take

account of the comprehensiveness of a program so far as the scope of objectives is concerned.

In addition to evaluating the comprehensiveness of statements in the nature of philosophy and objectives, the scales are designed to call the evaluator's attention to the distinction between the broad and specific objectives of the special program, and to distinctions that may exist between the goals of general education and those objectives that have particular relevance to furthering the development of youngsters with identifiably superior potential.

A very important interrelationship between the theory and the evaluative instrument is found in the area of curricular design (columns 3 and 4). The panel of judges that assisted in isolating the key features considered the curriculum to be the second most necessary aspect of differential education, surpassed in importance only by considerations relating to the selection and training of teachers for the gifted. The theory with which we are concerned is educationally relevant because it mainly deals with what can be accomplished, through systematic curricular experiences, to convert potential to product. Thus, it would not be inappropriate to refer to Ward's theory of DEG as a curricular theory.

Four of the evaluative scales are designed to assess the quality of experience which comprises both the content and process of the differentiated curriculum. The first set of scales in this area deals with the relevance of conception of the curriculum. A number of guidelines are provided to assist the evaluator in determining whether or not the curricular experiences are designed in essence to evoke and develop recognizably superior behavioral potentialities. An additional concern of this scale is whether or not the activities offered to gifted youngsters are conceived as a fully integrated part of the total school program, including academic credit, as opposed to a program of extra activities that must be carried out on the student's own time.

The second and third scales under curriculum are concerned with comprehensiveness and articulation. According to the theory, curricular modification should be provided for all gifted youngsters at every grade level and in all areas where giftedness is educationally significant.

With a certain amount of guidance provided by the scale dealing with comprehensiveness, it becomes the task of the evaluator to check the degree of presence or absence of developmental experience in the respective cells of columns 3 and 4. By surveying course outlines, syllabi, and other descriptive materials, by visiting a representative sample of classes, and by talking with students and teachers the evaluator may determine if, for example, the experiences for bright youngsters characteristically involve complex mental processes (3 c); or if the curriculum includes purposefully planned experiences in personal values, character, and emotional integrity (3 a, 4 a). The scale dealing with articulation seeks to determine whether or not function and structural relationships exist among the subjects and experiences of the specially constructed curriculum. This scale might focus on cell 3 b, and the evaluator may study the total curricular design of a given program to determine if the bright youngster is systematically introduced to "all knowledge" at some point in his school career.

Scale 4 in the area of curriculum deals with the adequacy of instructional facilities and materials. The relationship between this scale and the theory is quite simple. The development of certain extraordinary abilities sometimes demands facilities and equipment not ordinarily found in the regular school. Thus, tomorrow's computer scientist has to have access to machines

that in most cases are reserved for Ph.D's or graduate students, and the Clarence Darrow's and F. Lee Bailey's of the next generation may need a law book or two that doesn't come in the regular Scott-Foresman order.

In conclusion, certain discrepancies that exist between the theory and the instrument need to be noted. First, the evaluative scheme does not take account of the products or outcomes of the differentiated educative process. By design, our instrument is intended to evaluate programs rather than products. A rather lengthy discussion of the rationale underlying our choice of presage rather than product variables is included in the manual of the instrument. Briefly, it is our belief that at the present time behavioral science simply has not produced a comprehensive set of valid and reliable means for measuring the kinds of products toward which the theory of DEC is directed ("the optimally developed, continually becoming person...").

Other discrepancies exist between the theory and those DESDEC scales relating to the selection and training of teachers, and to the organization and operation of the program. These may be genuine discrepancies, i.e., the theory simply does not take account of these features of a program, or it is implicit that these rather instrumental aspects of differential programs are assumed to be present when extraordinary efforts are devoted to the development of special content and instruction. In other words, if a local school system follows the theory in developing its special program, it is quite likely that attention will be given to such features as teacher selection and training, administrative leadership, and general staff orientation.

As was indicated, we are now working concurrently on two separate but interrelated pieces of work. One is the monograph dealing with the theory of differential education for the gifted and the manifestations of theory in program development and evaluation. The second piece of work is a revision of the DESDEC scales and manual. Part of our intention in these continued efforts is to eliminate, or at least minimize, the discrepancies that presently exist between the theory and the evaluative instrument.

SYSTEMATIC APPLICATIONS OF THEORY IN CURRICULAR DEVELOPMENT

by

Louise Ann Schifferli

Introduction

The curriculum resulting from a systematic application of the theory of differential education for gifted children is derived from columns 3 and 4 on the "Table of the Theoretical Rationale (in Virgil S. Ward's paper, Differential Education for the Gifted: Theoretical Principles)." Column 3 is concerned with the substance of the curriculum: knowledge of and about arts and sciences, values, and behavioral skills. Process (that is, learning and instruction) comprises column 4. Curricular content is dictated by the experiential or behavioral potentiality possessed by the gifted individual and the developmental objectives which follow therefrom.

Noncognitive Areas of the Personality

Looking at the first column of the table, it can be seen under a that

the first characteristic of gifted children in terms of experiential and behavioral potentiality concerns the noncognitive areas of personality. The emotional and motivational attributes of the deviant child may or may not be significantly different from those of the average person. However, to whatever extent extremes in temperament or sensitivity occur, the curriculum should make provision for this deviance.

The content of the curriculum corresponding to this noncognitive area would be valuable information. Problems of conformity, purpose in life, or situational ethics seem to have special interest for the gifted student, since his heightened sensitivity in combination with superior intellectual perception leads to an ability to make much finer discrimination in terms of ethical values. Thus, for example, the gifted child can more clearly understand the idea of Bonhoeffer and others that "telling the truth" means something different according to the particular situation in which the person is functioning and the people with whom he is communicating.

In terms of process, the curriculum would be composed of cognitive and situational experience and guidance involving motive and emotion. For those endowed with superior potentiality, especially those at the very highest levels of the intelligence continuum, relationships with other people can be very difficult. Such individuals do not realize that most people are very different from themselves. They have little tolerance for those who do not comprehend or in fact are not even interested in thoughts and ideas which appear both very evident and very significant to the gifted individual. Although social justice, or the ideas of the individual's right to personal achievement and well being, as opposed to his obligation to the welfare of his fellow man, may be of grave concern to the gifted, many people of lesser intelligence are not interested in this type of problem, nor do they even conceive it as a problem. One of the goals of the curriculum, which could be accomplished in a seminar discussion, would be to have the gifted students recognize the unusual nature of their interests and understand some of the reasons for the feelings and viewpoints of others.

Superior Intellective Potentiality—Conceptual Development

The second characteristic in column 1 is superior intellective potentiality, moderate to extreme. With the developmental objective of conceptual development, the curriculum for the gifted would encompass all knowledge from an epistemological point of view, rather than the traditional substantive material usually taught to children throughout our formal education system. Epistemology, or "knowledge about knowledge" refers to the nature of a particular field and the methodology employed in its study. By the nature of a discipline is meant its history, representative ideas, illustrative problems, limits of each field, and relations between fields. For example, in regard to the natural sciences, all the areas within the field would be identified, rather than teaching as separate entities "Rocks and Minerals," "The Human Body," or "The Solar System." Earth sciences, physical sciences, and biological sciences would be differentiated and the particular studies that comprise them would be identified. Furthermore, students would consider such questions as, "What is the vocabulary of science?" "What is the nature of science?" "What is the scientific method?" and "Who are the important men of science today?"

In the study of language, rather than just adding a foreign language to the curriculum of the gifted, the more generic studies of linguistics or philology, which are fundamental to all languages, would be considered. For example, the students might study such areas of linguistics as etymology, which involves tracing words to their earliest ascertainable base in the language

and establishing the group to which the words belong, or semantics, which includes the study of the evolution of the meanings of words and reasons for their survival, decay, disappearance, and occasional revival, as well as the causes of the creation of new words. Other branches of linguistics that the students might investigate are syntax, phonetics, and phonology, as well as morphology, i.e., parts of speech and the forms and formations of words—subjects which, of course, are now usually taught to most children in a dissociated fashion.

The gifted child, after learning about the general realms of all knowledge and a little about the methods of study used in each, would then be prepared to embark upon more particularized learning at any time during his life span. Independent study would be possible in accordance with personal interest or need. Formal instruction or social interaction could be sought if considered necessary or desirable for the particular subject area.

Superior Intellective Potentiality—Intellectual Development

Again referring to the charts, Ic designates the same characteristic of superior intellective potentiality, moderate to extreme, but in this case the developmental objective is intellectual development. The curriculum should consist of any knowledge or activity involving those complex mental processes which are subject to structural modification through experience, processes suggested by concepts such as strategies for learning, duetero learning, and cortical commitment. Thus the study of any subject material should involve the higher mental processes rather than being composed of simple factual statements. For example , in any type of research work, the student should attempt to distinguish facts from theory or unproven ideas. Variations in the information located should be noted and reasons for these sources. Books could be read and interpreted along with an evaluation of authoritative sources. Books could be read and interpreted on different levels of meaning; they could be evaluated according to criteria established by the students as being significant. Current political situations could be used for study in predicting the effects of various actions or developments on existing situations. Curricular process would involve such methods as seminars, debates, etc., and the writing of theoretical essays. Any type of procedure which encourages the utilization of the more complex mental processes would be appropriate.

Superior Localized Behavioral Potentiality

Finally, in the chart under Id in the first column, extreme superiority in localized experiential and behavioral potentiality is indicated as being characteristic of gifted children. Several identifiable aptitudes could be isolated: mathematics, music, drama, dance, painting, foreign languages, and others. Taking for example the aptitude for music, curricular content would be comprised of subject matter specifically geared to the talent.

Rather than merely providing piano lessons as is often done with children possessing musical talent or even with the average child, a systematic approach would be taken to the study of the whole field of music. Technical knowledge would be considered in its full subtlety and complexity. Music history, the great composers and their works, theory, harmony, and music composition should be studied. Students should have the opportunity to play many instruments, though they may choose to devote most of their time to only one or two. Music students should also try their own music composition.

In terms of learning and instruction, study should be sustained over the entire period of schooling. Independent study would probably comprise a

major portion of the work, with utilization of both school and community resources, especially in a metropolitan area. Any possible access to concerts, operas, or other musical performances could be used: live performances, television, radio, or record libraries. Some larger communities offer adult evening classes concerning such subjects as baroque instruments; these might also be available to an interested musically talented child or adolescent. Appropriate activities would include singing in small groups, or playing in bands and orchestras.

Conclusion

Considering the above points to illustrate positively how the theory contributes to a disciplined concentration on substance of experience in close harmony with (a) potential and (b) objective, it can be seen that many of the practices of school systems labeled as special education for the gifted are recognizably inadequate. Practices such as assigning additional arithmetic problems with larger numbers, or demanding that more difficult books be read; accelerating or grouping without curriculum change; or enrolling students in additional subjects, college courses, or correspondence courses at random fail to conform to specific cells (i.e. junctures within the pattern of potential against process, leading to product) and therefore do not offer differential education for the gifted.

If in devising a curriculum for gifted children, reference is made at every check point within the matrix to experiential and behaviorial potentiality, and the procedure for developing those potentialities, as has been done here, the theory forces comprehensiveness. It allows judgement to be exercised in balancing, focusing, and distributing all those efforts essential to an ideal program of differential education for the gifted.

TEACHER-PUPIL INTERACTION PATTERNS IN CLASSES FOR THE GIFTED: THE PRODUCTS OF FACILITATING VERSUS INHIBITING TEACHING PRACTICES

by

Fred K. Honigman

It is widely recognized that gifted children have a unique facility for engaging in complex, high conceptual level activities and that they tend to exhibit a great deal of intellectual curiosity, initiative, and independence in the their everyday behavior. It is also recognized that the responsibility for a systematic program for cultivating the intellectual potential of gifted children rests with the schools. Passow (1958) discusses the schools' role in the nurturance of gifted students' high level performances:

> The basic goals for the education of the gifted child is the same as that for all children...These objectives differ from those for other children only in the relatively greater emphasis placed on creative effort, intellectual initiative, critical thinking...While these same objectives are desirable for all students, they are essential for the gifted if they are to achieve maximum self-realization.

In tying these goals to teaching practices he asserts, "Methods which stress independent thinking and action, building relationships, and problem solving...are more productive than some which offer primarily rote learning and

repetitive drill."

This general prescription for teaching practices is supported by Gallagher (1964):

> The program of education for gifted children should include training for autonomy and independent thinking. A program that merely calls for the dutiful collection of facts, which is all too prevalent in our educational programs, will not lead to this goal.

Throughout his book, Gallagher stresses the need for eliciting original and spontaneous contributions from gifted students. He notes that discovery requires original responses, that fluency (one of the components of creativity) is stimulated by "brainstorming," and that divergent thinking must be present for any creative functioning. Further support for this point is given by DeHaan and Havinghurst (1957), who strongly endorse the teacher's use of questions that elicit divergent responses from gifted students.

Inhibiting Instructional Practices

Although gifted children's ability to produce high conceptual level output is widely recognized, several authors have shown concern about their tendency to give mediocre intellectual performances in the presence of inhibiting influences. Both Goldberg (1958) and Strang (1958) discuss social and institutional factors which serve to inhibit gifted students' high level functioning. Gallagher (1964) talks specifically about the teacher's having either a facilitating or inhibiting influence on students' productive thinking, and offers a series of tongue in check recommendations for inhibiting the production of students' high level contributions e.g., "...Do not allow discussion or evaluative statements on the part of the students."

Namy (1967) expresses concern that elementary teachers emphasize learning activities and evaluation methods which do not require students to use higher level cognitive processes. He cites research that suggests that gifted elementary students frequently have little opportunity to utilize their intellectual potential. In addition, Roe (1960) asserts that children's investigative behavior can be inhibited by restriction, coercion, and threat.

Actual Classroom Performance of the Gifted

In the preceding section, it was mentioned that, although gifted children are perceived as having a unique talent for generating high conceptual level contributions, their actual production of this high level output may be contingent upon whether they are exposed to facilitating or inhibiting teaching practices in the classroom. The relationship between facilitating versus inhibiting teaching practices and the production of high conceptual level contributions by gifted children can be investigated systematically. Two questions have been suggested that are amenable to formal investigation:

1. Under the proper conditions (i.e., facilitating teaching practices) do gifted children actually produce more and better quality high conceptual level contributions in the classroom, and, in general, perform more independently and spontaneously than the general student population?

2. Can these children be turned off by an inhibiting teacher (i.e., be made to produce relatively low level contributions and demonstrate little

spontaneity and independence)?

To the present there are relatively little objective data about gifted students' production of high level contributions in the classroom in comparison with that produced by the general student population. Instrumentation which permits quantification of teacher and pupil behavior in the classroom on an objective basis (in comparison to rating scales or other judgmental types of data collection procedures) is a fairly recent phenomenon in educational research. To the author's knowledge, there has been only one study which has attempted to quantify the conceptual level of students' contributions in just such an objective manner, and relate these data to the conceptual level of teachers' questions. This study was conducted by Gallagher and Aschner (1963), using their own objective behavior coding system based on Guilford's structure of intellect. Gallagher and Aschner found that there was a close relationship between teachers' asking divergent questions and students' production of divergent contributions. To the present, however, this study appears to be the only one of its kind.

Harris (1960) discusses the need for more research on teaching practices for gifted children with vehemence:

> I am appalled at the dearth of data and, in the absence of such data, at the wealth of firm opinion concerning practice. In view of these circumstances I suppose we should not be surprised at the measure of emotion apparent in our discussions. I am also appalled that the data we now possess concerning the gifted youngster and the nature of the educational process are so cheerfully overlooked, or so superficially considered.

The present study represents an attempt to provide data about teaching practices for the gifted by comparing gifted children's production of high level contributions under both facilitating and inhibiting teaching practices to that produced by the general student population.

Procedure

To examine gifted children's production of high level contributions in relation to those produced by the general student population, objective data about teacher and pupil behaviors were gathered from four enrichment classes for the gifted from the Elementary and Secondary Education Act (E.S.E.A.) Title I programs in Philadelphia schools and four regular classes selected randomly from other Title I programs in the Philadelphia schools. All were intermediate elementary classes. The enrichment classes were part of the "Academically Talented—Potentially Able Student" (AT-PAS) program. The racial composition of the AT-PAS classes was approximately 50 percent Negro and 50 percent white. The children in this program were offered enrichment classes in four subject areas: science, social science, language arts, and mathematics. Participation in the program and selection of the classes was voluntary.

The classes selected to represent the general student population were taken from schools that were largely Negro in composition.

The instrument used to gather data about teacher and pupil behaviors in this study was the Multidimensional Analysis of Classroom Interaction (MACI), developed by Honigman (1967). MACI is a system of categories and related coding techniques which permits a trained observer to record and classify, in

correct sequence, every behavior or event that occurs in the classroom. When organized, the resulting data reveal the actual frequency with which each category of behavior was performed during the observation period, the typical length of performance of each of these categories, and the frequency with which a sequence of any two categories occurred.

The conceptual level of students' contributions was determined by examining the relative amounts of MACI categories 1 and 2 (students' original and preestablished contributions, respectively). MACI Category 1 (students' original contributions) is roughly analagous to a combination of Gallagher and Aschner's (1963) "divergent thinking" and "evaluative thinking" categories, whereas Category 2 (students' preestablished contributions) is roughly analgous to a combination of Gallagher and Aschner's "cognitive memory" and "convergent thinking" categories.

In addition to investigating the relative amounts of these two categories of student contributions, the typical length of students' original behaviors was also examined. This was felt to be indicative of the depth and complexity of these contributions. The number of spontaneously contributed performances given by students and the number of student to student interactions recorded during each observation were also examined. These were considered to be reflective of students' spontaneity and independence in the classroom.

Each class in the study was observed twice, each time by a different observer. Each observation was approximately 45 minutes in length. Both observations for each class were combined to provide the necessary data.

Data Analysis

Because of the small sample sizes, no tests of significance were attempted. However, three groupings of classes were made, and descriptive measures for each computed. The three groupings were:

1. Gifted group with a facilitating teacher (Gifted Facilitating)

2. Gifted group with an inhibiting teacher (Gifted Inhibiting)

3. Regular classroom group (Regular).

There were three classes in the Gifted Facilitating group, one in the Gifted Inhibiting group and four in the Regular group. The determination of facilitating versus inhibiting classes was predicated on the general amount of structure imposed by the teacher on the students, particularly in terms of the kinds of questions that he asked. A teacher whose questions sought inferences, conclusions, judgments, and evaluations, was considered facilitating, whereas a teacher whose questions sought facts and information or other types of "one correct answer only" responses was considered an inhibiting teacher.

Determination of the relative amounts of Category 1 (Original) and Category 2 (Preestablished) student behavior was achieved by computing the ratio:

$$\frac{\text{Category 1}}{\text{Category 1} + \text{Category 2}}$$

for each class. This ratio represented the proportion of all relevant cognitive student contributions that were original (i.e., high conceptual level).

The higher this ratio, the greater the relative amount of high level student contributions.

Determination of the relative length of students' high level contributions was achieved by computing a measure known as the Ratio to Category Frequency. This measure represents the number of recordings for prolonged Category 1 contributions relative to the total number of Category 1 contributions given (both long and short). The higher this ratio, the longer the typical length of students' Category 1 contributions. This is indicative of the depth and complexity of students' original contributions.

Determination of the number of spontaneously performed contributions was achieved by the formula:

$$\frac{X}{\text{Student Behavior}}$$

where X represents the number of spontaneous student contributions, and Student Behavior represents the total number of all student contributions. The higher this ratio, the greater the proportion of all student behaviors that were spontaneously performed.

Determination of the number of student to student interactions was achieved by examining the frequency of the sequence 1-X (i.e., the frequency with which a high level student contribution was followed by a spontaneously performed student contribution). The higher this number, the greater the number of student to student interactions that occurred during the observation period.

Results

The classrooms were identified by the group to which they belong: Gifted Facilitating, Gifted Inhibiting, and Regular. Table 1 shows the proportion of relevant cognitive student contributions for each group that were Original (high level).

Table 1

The Proportion of All Relevant Cognitive Student Contributions that Were "Original"

Gifted Facilitating			Gifted Inhibiting	Regular			
Group 1	Group 2	Group 3	Group 1	Group 1	Group 2	Group 3	Group 4
92.4%	53.8%	86.1%	10.0%	14.2%	10.7%	11.6%	7.0%

Clearly, the results are in the expected direction. The mean proportion of Original contributions (i.e., the proportion of relevant cognitive student contributions that are high level) was 77.4 percent for the Gifted Facilitating group, 10.0 percent for the Gifted Inhibiting class, and 10.9 percent for the Regular classroom group. The results for the Gifted Inhibiting class are obviously much more closely allied to those of the Regular group than the Gifted Facilitating group.

Table 2 presents the typical length of performance figures for the

different groups for Category 1 type student behavior.

Table 2

Typical Length of Performance Figure
("Ratio to Category Frequency")
for "Original" Student Contributions

Gifted Facilitating			Gifted Inhibiting	Regular			
Group 1	Group 2	Group 3	Group 1	Group 1	Group 2	Group 3	Group 4
.34	.61	.62	.00	.48	.09	.11	.20

Again, the results are in the expected direction, but less dramatically so than for the previous measure. The mean Ratio to Category Frequency for the Gifted Facilitating group was .52, for the Gifted Inhibiting class, 0.00, and for the Regular class group, 0.20. In this measure, the least favorable findings in terms of the length (i.e., depth and complexity) of students' original contributions were in the Gifted Inhibiting group; the most favorable in the Gifted Facilitating group.

Table 3 shows the relative amount of spontaneously performed student contributions for the three groups.

Table 3

Proportion of All Student Contributions
That Were Spontaneously Performed

Gifted Facilitating			Gifted Inhibiting	Regular			
Group 1	Group 2	Group 3	Group 1	Group 1	Group 2	Group 3	up 4
50.9%	32.3%	43.8%	9.0%	4.1%	6.9%	3.8%	6.9%

The mean proportion of all student contributions that were spontaneously performed was 42.3 percent for the Gifted Facilitating group, 9.0 percent for the Gifted Inhibiting group, and 5.4 percent for the Regular group. As in the first measure, these findings are in the expected direction. Also as in the first measure, the findings for the Gifted Inhibiting class were more closely allied to the Regular group than the Gifted Facilitating group.

Table 4 shows the number of student to student interactions in each group.

Table 4

Frequency of Student to Student Interactions

Gifted Facilitating			Gifted Inhibiting	Regular			
Group 1	Group 2	Group 3	Group 1	Group 1	Group 2	Group 3	Group 4
157	15	10	0	0	0	0	0

The variability in the Gifted Facilitating group is substantial, ranging from 10 to 157. However, even if the 157 had been simply 15, the comparison between the Gifted Facilitating group and the others would be dramatic, for there was not a single student to student interaction recorded in either the Gifted Inhibiting group or in the Regular group; the only student to student interactions produced were in the Gifted Facilitating group.

Discussion of the Results

In every measure investigated in this study, the Gifted Facilitating group showed substantial advantage over both the Gifted Inhibiting class and the Regular class group. Interestingly, the results for the Gifted Inhibiting class were more akin to those of the Regular class group than they were to the Gifted Facilitating class. Clearly, the two main assumptions discussed earlier have been borne out by the data:

1. Gifted children, in a facilitating classroom setting, produce more and better high conceptual level contributions, and perform more independently and spontaneously than the student population at large.

2. Gifted children, in an inhibiting classroom setting, can be made to produce fewer and shallower high level contributions and to demonstrate less independence and spontaneity than in a facilitating classroom setting.

The finding of a greater amount of high conceptual level performance by gifted students under facilitating teaching practices is in harmony with the Gallagher-Aschner (1963) finding that a teacher who asks divergent type questions elicits a greater amount of divergent type responses from students. In addition, there were a number of parameters of student behavior examined in this study that have not, heretofore, been investigated systematically and objectively: the length of students' high level contributions, the number of spontaneously performed contributions they gave, and the number of student to student interactions performed during the observation. In all cases, the superiority of the Gifted Facilitating group over the Gifted Inhibiting and Regular class group was quite evident. Perhaps the most dramatic of the findings, however, was the total absence of any student to student interactions in either the Gifted Inhibiting class or the Regular class group. This was more remarkable since each class was observed twice, for 45 minutes each time, and the data from both observations pooled.

The striking differences among the groups was quite notable for such a small population. However, because of the small N, these differences were not subjected to tests of significance.

Limitations, Implications and Conclusions

For a variety of reasons, it is important for this study to be regarded as a pilot study. To begin with, the lack of rigor in the sampling procedures precludes generalization of these data to the larger educational setting. In addition, the small population did not permit the data to be treated to tests f significance. The lack of rigorous criteria for identifying and selecting inhibiting teachers in advance of the study calls to question the discreetness of this classification. Furthermore, no attempt was made to relate presently quantifiable elements of teaching practices to the output measures of this study (i.e., the production of high level thinking and independent performance). Were this to be done, it would be possible to derive empirically

1. The infant who does little babbling or who speaks few words should be taught to imitate the teacher's vocal sounds. Imitate the sounds the infant produces spontaneously, making it seem like a game which is fun to play so that the infant will again make the sound. Then, say a new sound trying to initiate imitation on the part of the infant.

2. Show the infant objects found in his environment and encourage him to repeat their names.

3. Show the infant pictures in a book and ask him to point to various items, e.g., "Where is the dog?"

4. Ask him to say the name of a pictured object, e.g., "What is this?"

5. Tell the infant to demonstrate the use of a pictured object, e.g., "What do we do with a spoon? Show me."

6. When an infant is able to talk, discourage gestures or grunting by telling him how to ask for an item. Do not give it to him unless he says the word or words. If he is able to say "wah wah" for water this should be accepted, but when is able to say "water" he should be expected to say it precisely. Still, when he is able to combine words, he should be told to say, "I want water."

7. Although the infant should be shown what to do through teacher demonstrations, he should also be expected to follow verbal instructions, such as, "Put the toy back in the box."

Elaborative Language should also be encouraged. Dramatic play, rhymes, and songs should be used to develop the extension and spontaneity of speech. Adjectives and adverbs should be used and the child should repeat, e.g., "This is a blue car. The car goes fast." Objects, paper doll cut outs, and parts of the body may be used to teach prepositions, e.g., "Put the penny in your hand, under your feet, between the mother and father doll." Many teaching devices can be used to teach antonyms, e.g., "warm cold" milk, "opened closed" box, "long short" pretzel sticks.

The breaking down of "giant word units" as suggested by Bereiter and Engelmann (1966) should be encouraged. The child who says, "Tha ha" should be encouraged to say "That hat," or "That is a hat" depending upon his level of speech development.

Internal dialogue should be encouraged. Manipulative activities which require time to observe a problem and to plan for a solution should be verbalized for the child. Encourage the child to repeat this dialogue, then to whisper it, and then to say it silent while working. For example, in working a puzzle, tell the child, "We start at the head; turn the piece around until it will fit." As he repeats the manipulation, he should be told to whisper the pattern and then to say it to himself.

Rationale for Conceptual Training

Research has emphasized the relationship between language and conceptual development. Concept formation apparently does not await the learning of names or labels, and language development serves to facilitate a process already begun on the nonsymbolic level. Yet the power of language in advancing conceptualization cannot be minimized. Providing a name or nonsense

grounded, behavioral prescriptions for facilitating type teaching of the gifted.

Nevertheless, it is felt that the data from this study (especially the strong contrast between the findings for the Gifted Facilitating and Gifted Inhibiting teachers with the same general student population) justify consideration of a more ambitious and more highly structured investigation along the same lines. This more structured investigation should, moreover, culminate in the derivation of an objective, behavioral profile of facilitating teaching practices for the gifted.

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DEVELOPING THE POTENTIAL OF THE CULTURALLY DISADVANTAGED INFANT

by

Genevieve Painter

It is generally agreed that culturally disadvantaged children are not being educated to take their places as contributing members of society. This is not only a social but a personal loss as well. Comparisons of infants from differing cultural backgrounds generally reveal no developmental differences; however, developmental deficits are well established in children from culturally disadvantaged families by the age of three (Bayley, 1965; Pasamanick and Knoblock, 1961). The precise stage during which learning experiences will be unusually effective and influential on later behavior patterns is yet to be defined; however, research suggests that the earlier intervention begins, the greater are the gains which occur (Bloom, 1964; Kirk, 1964). The question of whether or not preschool experience can help to eliminate developmental deficits is no longer seriously debated; the controversy now focuses on the defenders of the traditional or child centered nursery school program and the proponents of a structured preschool curriculum. Early reports of research projects involving curriculum innovation seem to indicate that the structured curriculum effects the more pertinent changes in the development of disadvantaged preschool children (Weikart, 1967; Karnes, Wollesheim, Stoneburner, and Hodgins, 1968).

Interest in the education of infants is increasing at a phenomenal rate. Research and service organizations are attempting to educate infants in their homes, in community centers, and in day care centers, and trying to teach groups of mothers to educate their own infants. Much has been written describing the spontaneous intellectual growth of infants (Gesell, 1940; Piaget, 1963), but little can be found concerning either efforts or theories relative to consciously sought and planned acceleration of growth. In answer to the question, "What shall we teach?", this paper presents a rationale (successfully employed in several research programs) for the structure of infant education and suggestions for appropriate activities. These suggestions can be used by professional teachers, paraprofessionals, and parents. Although the instructions are generally stated for a teacher with limited time, they can be adapted to a home setting with the mother playing her natural role as teacher. In that case, teaching sessions could be of shorter duration and repeated during the day.

The rationale must be built primarily upon studies of children of elementary school age since little is found in the literature on the acceleration of infant growth. Two major areas of emphasis in this rationale are language development and conceptual development because culturally disadvantaged children have generally been found to perform at a lower level than their advantaged peers in these areas. A third area, sensory motor training, is effective as a training technique. Culturally disadvantaged infants are not usually found to be deficient in motor development; however, since infants learn through sensory input, teaching should utilize sensory motor training to facilitate the development of concepts and language. Visual, auditory, tactual, kinesthetic, olfactory, and gustatory modalities should be stressed independently and in combinations in various activities. The infants should be encouraged to give both verbal and motor responses. An appropriate age for the initiation of this type of intervention is between ten and twelve months; earlier training is not considered in this discussion because of the absence of

speech development.

Rationale for Language Training

Bereiter and Engelmann (1966) postulate that the disadvantaged child master a language that is adequate to meet his social and material needs, but that is not adequate to transmit information and to carry on verbal reasoning. Deutsch (1964) suggests that a "cumulative deficit phenomenon" occurs in the area of language development between the first and the fifth grade years in the disadvantaged child and that such a phenomenon seems to be more pronounced for Negro children. Even extremely young children, ages 18 to 30 months, differ in number of sound types produced. Children in higher socioeconomic groups produced a greater number of differing sounds and added new sounds at a higher rate (Irwin, 1948 a and b). Spicker, Hodges, and McCandless (1966), observed language behavior as one of the most serious and pervasive psychoeducational disabilities among the preschool and kindergarten children in their study. The majority of the children were able to communicate their needs and to carry out simple verbal instructions, but many displayed gross inability to cope with elaborative language. Karnes, Wollersheim, Stoneburner, and Hodgins (1968) also report communication and psycholinguistic problems in the disadvantaged preschool children in their study.

Controlling one's actions through one's own words is a necessary step toward the mastery of dialectical reasoning (Luria, 1961; Vygotsky, 1962). Bereiter and Engelmann (1966) point out that information may be accumulated and used by controlling verbal behavior through an "internal dialogue" which differs from the social uses of language and may be the very core of verbal intelligence. They postulate that culturally disadvantaged children lack the most rudimentary forms of constructive dialogue and are therefore cut down at the basis of academic aptitude, the ability to have internal control of language to maneuver the sequential steps necessary for problem solving.

Suggestions for Language Training

Language development should be encouraged in all play activities. When the infant is given manipulative materials, the teacher should emphasize appropriate words or sounds as well as those which evolve naturally during the teaching session. For example, if plans are made to play with a ball, the teacher should plan to use sounds and words which she knows the infant might be able to imitate such as, "whee," "zoom," "ball," "roll." In addition, when the infant is actually playing, those sounds which evolve naturally such as "oh, oh," should be said by the teacher with the hope that the infant will imitate. The tutor should imitate the infant's speech in order to set a pattern of imitation as fun and play.

In addition to the encouragement of speech in all activities, the following structured language program is suggested: (a) beginning language, (b) elaborative language, (c) the breaking down of "giant word units," and (d) the encouragement of internal dialogue. Each child's language program should be initiated at his own level of development. It is suggested that the teacher sample tasks at each level with the child and begin training at the point where he is unable to perform. The nonverbal child, of course, would be encouraged to imitate babbling.

Beginning language may be taught as follows:

syllable for a number of objects will increase a child's tendency to respond similarly to each of the objects; conversely, providing different labels for different objects will increase the tendency to respond variously (Spiker, 1956). Representation by a language symbol constitutes the final step in concept formation. Rudimentary concept formation takes place at the prelinguistic level but is limited to relatively concrete situations. The process of generalization is facilitated if a concept can be subsumed under a verbal symbol (Ausubel, 1958). Prehm (1965) found that verbal pretraining had a significantly positive effect on the conceptual performance of culturally disadvantaged children and that the use of verbal labels may have made the visual stimuli which he used more meaningful. He suggests that these children be given increased language experience in the preschool years, especially practice in the use of verbal cues in the solution of problems.

Martin and Stendler (1959) write that formal education is largely a process of teaching concepts. It is presumed that the conceptual process involves both the differentiation of impressions which are originally diffuse and the integration of impressions which are originally detailed and fragmentary. Abstraction, discrimination, and generalization are utilized at all age levels. Older children and adults arrive at concepts both inductively, from the particular to the general, and deductively, from the general to the particular. These authors state that we know the conceptual abilities of children at various age levels but do not have an adequate understanding of the process by which young children acquire concepts or of the contributions of adults to facilitate that process.

The differentiation between language growth and conceptual growth in an individual is only theoretical since they are combined in the spontaneous development of the child. However, they may be considered somewhat independantly in the construction of an educational program for infants. Five concepts which are considered to be prerequisites for academic learning and which are usually acquired at an early age are suggested: (a) the concept of body image, (b) the concept of spatial relationships, (c) the concept of number, (d) the concept of time, and (e) the concept of categorical classification.

Suggestions for Conceptual Training

Concept of Body Image. In his discussion of perceptual motor spatial integration Kephart (1960) states that spatial relations and spatial directions develop first in relation to the child himself; only later are objective relations developed between objects. He suggests, therefore, that the child must develop a concept of body image, a clear picture of how he relates to space. The following are suggestions for helping an infant develop the concept of body image. Place a mirror in front of the infant. Allow him to name the parts of the body. Say, "What is this?" (pointing to hair). If he is nonverbal, say, "Show me your eyes." Tell him to point to or name the parts of the body on a doll and then on himself. Place the infant's hand or foot on paper or have him lie down on a large piece of paper; draw an outline of him with a felt tip pen.

Concept of Spatial Relationships. Piaget (1963) theorizes that the infant's earliest ideas of space depend upon where the child is at a certain point. A series of developmental stages follow in which he learns to comprehend a single objective space, encompassing objects and persons. As the child develops his concept of space, he learns to differentiate not only spaces but objects in them by their form. Ausubel (1958) writes that form discrimination is one of the earliest conceptual acquisitions of the child.

Size discrimination requires the relating of an object to other measures or objects and develops later.

Included in the concept of space are activities for the development of form perception, size perception, spatial relationships and seriation.

1. Train the infant to perceive the form of an object by having him place forms (cylinders, cubes, triangles) in their corresponding holes in the top of a form box. Teach him to draw geometric figures by using templates and encouraging free hand drawings.

2. Teach size perception by showing the infant how to place rings graduated in size on a pyramid shaped structure, the largest fitting at the base. Use large and small cookies, cereal pieces, and cardboard shapes (all of the same color to avoid confusion) to teach size.

3. Use nested cubes, poker chip designs, and puzzles to teach the amount of space necessary for placing objects, spatial relationships between objects, and position in space.

4. Use nested cans and boxes to teach seriation of objects.

Concept of Number. Piaget (1952) writes that ordination and cardination first occur at a global level and are dominated by immediate perceptual experience. The first percepts of number probably involve one in contrast to more than one, i.e., the child develops a percept of many before he begins to develop definite concepts of numbers. Counting is often learned on a rote basis prior to the acquisition of functional number concepts and cannot be considered a product of conceptual development (Ausubel, 1958).

The following activities are suggested to teach the initial stages of number concepts:

1. To differentiate "one" from "many" or "more," place pennies or cereal bits in front of the infant. Ask him for "one" and then for "more" or "many pennies." Show him how to do it by giving him the pennies or cereal pieces first.

2. To teach the concept of oneness, give the infant one penny in his own cup and one in yours; continue to alternate placement until all are placed; allow the infant to dole out the pennies.

3. Demonstrate the concept of twoness by holding two pennies in your hand and placing them in a small box; have the child imitate the procedure. Three to five boxes and six to ten pennies may be used. Tell the infant, "Make two in your hand and then put the two in a box; good, now make two again and put them in this box."

4. Teach the child to count to ten by rote. Of course, this will not teach him number concepts, but it will make him familiar with the words we use and their progression.

Concept of Time. Piaget (1952) postulates the following stages in the infant's experience of temporal happenings:

1. The child participates in a series of temporal events such as hearing a sound and then turning his head to find the source. The child may experience a vague feeling of duration intermixed with other vague

sensations of effort, need, and the like.

2. The child may then have some elementary consciousness of before and after in an action result sequence, such as pulling a string to activate an object.

3. The ability of the child to retain a series of events in which his own action did not directly intervene is a next stage in the experience of temporal happenings. In this case the child recalls an event rather than a past action. For example, the child searches behind a screen to find an object he has seen the experimenter hide there.

4. A further development in temporal awareness is demonstrated when the child is able to recall the events of a more remote past happening, such as remembering that mother put a toy on a particular shelf two days ago. (When the child is asked where the truck is, he points to the shelf.)

Temporal awareness should be stressed throughout the day as a part of the natural sequence of events: (a) The teaching session should follow an orderly progression. Tell the infant, "juice time," "puzzle time," "painting time," "time for teacher to go home" or "time to put away the toys." (b) Point out daytime, morning, breakfast time, lunch time, dinner time, sleeping time. (d) Tell the infant, "I'll see you tomorrow." "When I was here yesterday you showed me your cat." "Today we'll paint."

Concept of Categorical Classification. Ausubel (1958) states that concept formation consists of a process of abstracting the essential common features of a class of objects from a series of situations in which they vary contextually in unessential details, or along dimensions other than the particular ones under scrutiny. The common features are comparable configurations or sets of relationships. The young child classifies experiences in terms of immediately perceived properties rather than in terms of their class membership. Later, however, categorical classification tends to become the dominant mode of organizing experience. Ordering of experiences and segmenting them into manageable categories is a necessary component of cognitive development and is a prerequisite to academic readiness.

Classification concepts (the ordering of objects and placing them into meaningful categories) may be taught in a variety of activities:

1. Place three of four pictures, all alike but one, on the table in front of the infant. Tell him, "Give me the one that is different," or "Give me the one that doesn't belong there."

2. Place three of four different pictures in front of the infant and say, "Give me the one that is the same as this one in my hand."

3. Cut pictures from magazines. Teach the infant to sort pictures into categories. People, foods, dogs, cats, and birds are easily identified by an infant. Use two categories at first, then three. Tell the infant, "Put all the dogs in the dog house and all the people in the people's house." (Boxes labeled with a picture of a dog and a person represent the houses.)

4. Teach the child to sort chips, blocks, and the like into color categories. Use primary colors first.

This rationale emphasized the use of sensory motor materials in a way which would help to promote the language and conceptual development of very

young children. The areas chosen as the basis for this structured program of infant education reflect the areas in which disadvantaged children generally perform at a lower level than their advantaged peers. Their general area of strength, motor development, has been used as the most effective mode of presentation. Emerging speech and fine motor skills may be combined to enhance the conceptual development of young children if the activities are presented in a manner which is fun for the teacher or mother as teacher, and the infant. Infant teaching can be a satisfying experience for both teacher and infant and can do much to avert the deficits which disadvantaged children begin to reflect at about the age of three.

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ABSTRACT

THE GIFTED CHILD WITH SPECIFIC LEARNING DISABILITIES

by

Edward C. Frierson

The concept of "multiple exceptionality" is developed systematically in this presentation along with the important perspective that exceptional learning needs cannot be understood in terms of test scores alone. Attention is called to those children who possess unusual learning abilities and unusual learning disabilities. The abilities and disabilities are described and practical teaching procedures are discussed.

Five short sections are included in this paper, each of which is different yet complementary. First, through the technique of biographical analysis, several gifted men are shown to have been children with "specific learning disabilities." Many famous leaders of the past are revealed as having had behavior disorders, physical infirmities and sensory handicaps. Less publicized, yet just as debilitating, the specific reading and language disabilities of eminent leaders--and criminals--are described.

The second part of this presentation reviews the professional literature describing the cognitive abilities profiles of gifted children, retarded children and bright children with specific learning disabilities. Several significant conclusions emerge from this review.

Following the summary of literature, a study of the selection practices for gifted classes in a large metropolitan community is analyzed. Particular emphasis is given to the performance of children nominated but rejected for special class placement. Scores from achievement tests, "WISC's," "Bender and other measures are presented in support of the contention that some "gifted" children are not producing due to subtle and not so subtle learning impairments.

The fourth aspect of the paper is an educator's interpretation of several exceptional abilities and disabilities as they affect classroom performance. The learning characteristics of children with high general verbal ability and the characteristics of children with perceptual handicaps are demonstrated. Several examples are presented in which both patterns are present in the same child. As a result, educational problems of children possessing both unusual learning abilities and disabilities are delineated clearly.

The final portion of the presentation outlines the teaching strategies which are indicated when high verbal abilities are linked with perceptual disabilities. Materials and procedures found to be effective in selected tutoring situations are described. The limitations of empirical studies comparing groups are introduced. However, teachers are encouraged to adopt a behavioral science point of view in dealing with individual students.

In summary, the presentation emphasis the importance of knowing

1. What kinds of leaders gifted children with learning disabilities might become

2. What the literature reveals about the cognitive abilities of different groups of exceptional children

3. What school systems know and can predict about students with unusual abilities and disabilities

4. What abilities and disabilities mean to the classroom teacher

5. What teaching materials and procedures have been demonstrated to be effective with bright learners who have perceptual problems.

The paper demonstrates what the author means by the statement: "Every interaction of teacher and student is a test of the null hypothesis.

ABSTRACT

THE DISADVANTAGED GIFTED CHILD

by

William J. Tisdall

Research evidence and classroom observations indicate that devaluation of education is prevalent among children from economically and culturally disadvantaged backgrounds. Impairment of learning styles and motivations may be a common result of these environmental circumstances. Gifted pupils from this segment of the population tend to underachieve and display lowered levels of aspiration which are inconsistent with their otherwise high academic potential. A special school has been established in Kentucky as a new approach to the education of these children and as a setting for research related to their peculiar learning problems.

The Lincoln School is a residential high school operated by The University of Kentucky College of Education. It is coeducational, nongraded, and has a full academic year program. Sixty pupils are enrolled in the first class. A new freshman class will be admitted for each of three additional years until a total student body of 240 is in residence. Public school districts throughout the State participate in the nomination and selection of pupils.

Curriculum is determined by the academic needs and abilities of individual students. Curricular innovations are studied in conjunction with an ongoing research program. Other investigations related to motivation, social values, aptitudes, intelligence, self concept, and school achievement are either planned or underway. Preliminary data show promise for success in realizing both training and research objectives.

ABSTRACT

PATTERNS OF RESEARCH ON THE GIFTED

by

Marvin J. Gold

Recent research efforts in the area of the gifted can be summed up by noting that the major emphases have been investigations into (a) characteristics of gifted individuals, and (b) creativity.

Conclusions of recent research activities in the first area, characteristics of gifted individuals, are far from unique. There is an overwhelming body of often replicated work produced by researchers who have engaged in redundant research. There are areas of concern that need to be left alone unless they are looked at from a different vantage point or considered with a new factor added.

The surface of the second research push, creativity, has hardly been

scratched. The researcher is working in an area so new and so in need of refinement that replication is necessary. Examples of areas where a repetition of activities is desired include characteristics of creative individuals, the relationship of creativity and intelligence, and personal adjustment of highly creative individuals.

Between the work on characteristics and creativity a fairly large body of knowledge is accumulating. In characteristics it is a vertical expansion; in creativity it is both horizontal and vertical.

There are hints of greater potential to be found in recent research on the gifted. Among research activities that indicate a need for further research are those concerning curriculum, cross cultural studies, comparisons of gifted subgroups, and comparisons of different styles of performance among the gifted.

ABSTRACT

SPECIAL EDUCATION FOR THE GIFTED THROUGH TELEVISION

by

Mary M. Pilch

This is a federally funded project under Title III of P.L. 89-10, Elementary and Secondary Act of 1965, Project No. 67-03260-0. It was started July 1, 1967; the pilot area involves 39 school districts in northeastern Minnesota. 1968-69, the second year of the pilot phase, includes 125 individual schools and approximately 1600 identified and selected gifted students in grades five through seven. It is planned to extend the project throughout the State of Minnesota in 1969-70 should funds be available.

The purpose of the project is to implement an exemplary educational program for gifted elementary and junior high school students and their teachers by using a unique combination of new and different content materials combined with especially developed instructional strategies disseminated via television. It is anticipated that this innovative procedure will help facilitate the development of the skills for using the higher thought processes essential to the kind of productive thinking gifted students are capable of achieving.

The project develops a linked series of television programs which involve the use of selective films combined with original videotapes developed by the project staff. A weekly series of three half hour programs is scheduled during the school day. During 1967-68, thirty-six half hour programs were telecast for 12 weeks. In 1968-69, fifty-four half hour programs will be telecast for 18 weeks. During each weekly series students and teachers will view the following:

1. A "Content" film containing new and unique information not generally found in the conventional curriculum but directly related to the theme of the year's work. This will be the substantive vehicle from which the second series will draw material for demonstrating a classroom strategy emphasizing process.

2. A "Process" videotape developed by staff Master Teachers demonstrating the skills and strategies involved in the higher thought processes of productive thinking. No attempt is made to instruct for knowledge input. Strategies are used to illustrate a variety of ways possible to nurture the creative potential of these students. Interaction with the television teacher is encouraged.

3. An "In Service" videotape developed by the staff Master Teachers to explain the theory of learning demonstrated in the "Process" tape and how it can be implemented in the classroom in any of the regular subject areas. The students and teachers view both the "Content" and "Process" series; only teachers view the "In Service" series.

A syllabus containing objectives, vocabulary lists, bibliographies, and summaries of the content in all fifty-four programs (1968-69) will be distributed to all teachers involved.

Identification and selection of giftedness must be concerned with many kinds of talent at varying degrees of excellence. The project accepts this multidimensional concept and pursues a selective process composed of the following three phases:

1. Phase one identifies all children who score one standard deviation above the national mean as determined by the group intelligence tests administered in the local schools.

2. Phase two is the teacher observation and selection phase. The roster of student names provided in Phase one is used to process the second phase. Selection is based on a list of characteristics and traits associated with giftedness exclusive of those measured by an intelligence test. Each trait is carefully defined by the project and teachers rate each child on each trait. Teachers make a final selection in the Phase two process by selecting a minimum of ten percent but no more than twenty percent of the names on the original roster.

3. Phase three is the abilities testing phase. It is concerned with selection of giftedness in terms of thinking capacities, leadership, creativity,and personality. Those chosen in phase two will be administered specially selected tests measuring abilities in critical thinking, productive thinking and creativity. Final selection for field study and individual analysis will be made from this third phase process.

Pretesting and posttesting processes have been implemented. Separate questionnaires to students, teachers and administrators have been constructed and disseminated to get subjective evidence on opinions and reactions to the first year's programs. Ninety percent of these were completed and returned. Finally, staff members visited about fifty schools to get first hand comments and reactions to identification techniques, communication problems, and feedback and follow through needs. All these findings on the first year's activities will be summarized and reported as the evaluation phase of the project. The same processes will again be used during the year 1968-69.

Inservice activities using regional workshops, seminars, faculty meetings and institutes are part of the project's total effort. These occur before, during, and after the television schedule. Consulting services by staff members are available at all times. A mobile library of exemplary basic reference for gifted students is on loan throughout the year. Bibliographies, work study papers, and a professional library of reading materials on

the gifted are also available and in use. The videotapes produced by the project are catalogued and can be taken out on loan.

Detailed information can be obtained from the Project Director, Mrs. Mary M. Pilch, 315 Old Main, University of Minnesota Duluth, Minnesota 55812.

ABSTRACT

A REPORT ON A STUDY OF EDUCATIONAL PROGRAMS FOR GIFTED CHILDREN IN SELECTED ELEMENTARY SCHOOLS IN THE UNITED STATES

by

William G. Melville

In 1965, in cooperation with Dr. Russell I. Hammond, Director of the Research Department in the College of Education at the University of Wyoming, and with the support of the American Association for Gifted Children, Incorporated, a nation wide study of educational programs for gifted children in selected elementary schools was initiated. The purpose of this study was to investigate and report on the education of gifted children in the elementary school by answering these questions: What is being done in the regular and special classrooms for gifted children? How is it being done? On what principles should a program for the gifted be planned?

Questionnaires were sent to representatives of state departments of education, state education associations, colleges and universities, and school systems. Of 293 persons asked to participate, slightly less than 75 percent or 213, responded. All respondents were asked to evaluate a list of 25 principles for setting up and evaluating programs for gifted children in the elementary school. Persons involved in the actual process of educating gifted children were asked to evaluate their programs according to the list of 25 principles and to answer questions concerning the actual operation and organization of their classes.

The five highest rated principles were:

1. The Principle of Social Orientation of Education
2. The Principle of the Guided Approach to Teaching
3. The Principle of Experimental Approach to Providing for the Gifted
4. The Principle of Adequate Stimulation
5. The Principle That the Education of the Gifted Child Should Emphasize Enduring Methods and Sources of Learning, as Opposed to A Terminal Emphasis Upon Present States of Knowledge.

The top five principles being implemented most effectively according to the respondent's ratings of their own programs were:

1. The Principle of the Experimental Approach to Providing for the Gifted

2. The Principle of Enrichment As A Qualitative Rather Than A Quantitative Concept

3. The Principle of Social Orientation of Education

4. The Principle of Adequate Stimulation

5. The Principle That in the Education of the Gifted Individual There Should Be Considerable Emphasis Upon Intellectual Activity.

In the findings of the survey of ongoing programs, some of the interesting points were:

1. More gifted children were identified in the third grade than at any other level.

2. The first grade was the level at which special provision for the gifted was most generally initiated.

3. Mathematics was the subject most widely taught in special classes.

4. Critical thinking was the main objective of most of the programs.

5. Teacher observation was the most widely used measure of objectives.

6. Curriculum provision for children in kindergarten through third grade was in ungraded classes.

7. Curriculum provision in grades four through six was through offering subjects beyond grade level.

8. Almost half the programs were not evaluated.

9. Most programs had been initiated since 1957.

10. The best teachers available were selected to teach special classes, but only seven respondents replied that their teachers were certified to teach gifted children.

11. Evaluation was the greatest problem area.